The Greatest Fish Story of the Aquamarine Fukushima

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Aquamarine Fukushima

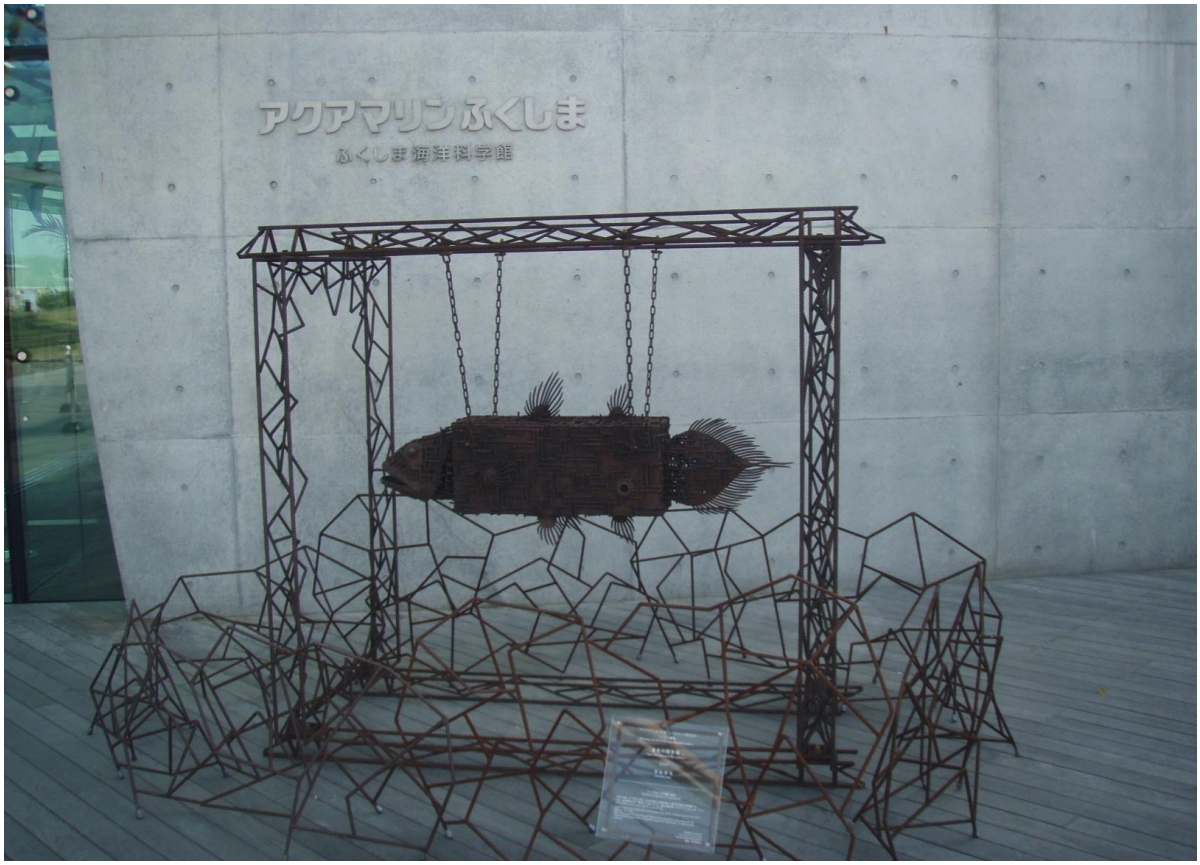

Fig.1. Iron Coelacanth, worked by Atsushi HIBI welcome you to the Aquamarine Fukushima.

INTRODUSTION TO THE EVOLUTIONARY STORY

My personal history for the aquarium started 1964 to the present. The story traced back to the Ueno Zoo Aquarium in the Ueno Zoological Gardens, the oldest zoo in Japan, managed by the Tokyo Metropolitan Government, where a new aquarium was opened to public in 1964 to share the exhibits of creatures of lower branches of the phylogenetic tree in the zoo.

1 engaged the new aquarium project before opening for the preparation. My job was to correct and maintain for the creatures on the lower branches of the phylogenetic tree in the 4 stories building, such as jellyfish.

There are so many tanks, pools and cages to cover the collections as shown the phylogenetic drawing on the wall. The creatures tanks on the branch of tanks and cages are numbered No number means no collection like the branch of the Coelacanth. This coelacanth branch has been weighing on my mind since then.

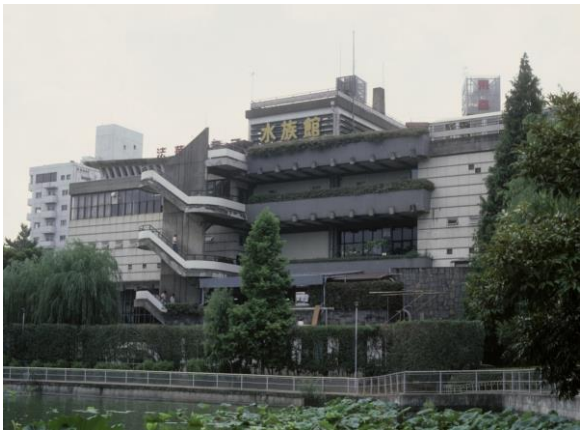

Fig.2. Ueno Zoo Aquarium (1964-1992), 4 story “Phylogenetic Tree”.

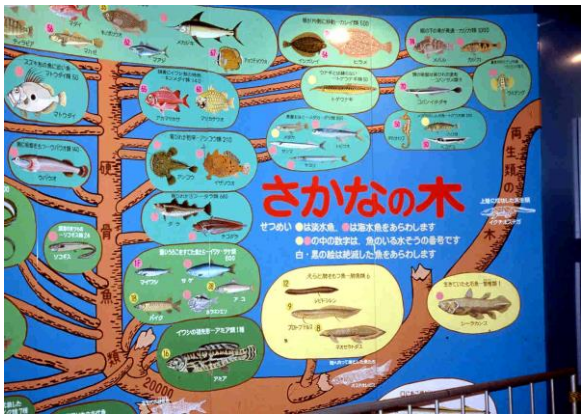

Fig.3. Phylogenetic Tree in the Ueno Zoo Aquarium.

Next stage was the Tokyo Sea Life Park challenging to realize the collection of sea fishes from the Seven Seas, including tuna migration within aquarium tank. Open to public in 1989. Present author engaged collecting fish from the Seven Seas including Comoro Islands, Coelacanth habitat, and tuna husbandry.


Fig.4. Tokyo Sea Life Park (1989-), 100m diameter, 2 story building.


Fig.5. School of tuna realized. 2000ton, round tank.

Then present author engaged the Project of Aquamarine Fukushima, Marine Science Museum (AMF here after) to build aquarium at the 2nd wharf of the Onahama Port. Under the waterfront developing project in the Port, Fukushima Prefecture opened 2000. AMF, conceptual phrase, “Pondering through the seas, the future of humankind and the earth” is well reflected the strategy of the environmental aquarium, enlightening present environmental issues and pondering the ancient environment.


Fig.6. Aquamarine Fukushima, Marine Science Museum.(2000)

Prologue Started with the Evolution and Extinction. The story will connect the greatest fish story with us Aquamarine Fukushima.

These are one of the backgrounds why AMF has been focusing on the Coelacanth Project. Because Coelacanth is not merely for the interests of Menageries age but those for the concept of conservation of such precious creatures of the water planet.

Dr. Teruya Uyeno paleontologist of the National Museum was the advisor of the Prologues to started with the evolution. Now specimens of two species of coelacanth are in the galleries. Through working for three aquariums, the coelacanth is always located at the center of my fish story. The strategy of the environmental aquarium, enlightening present environmental issues and pondering the ancient environment.

Fig.7. Prologue themed Evolution and Extinction.

Coelacanth survey is placed as the In-situ Conservation Abroad

Aquamarine Fukushima, Marine Science Museum (AMF here after) prologues “Evolution and Extinction” and fossil and living fossil are arranged. Exhibit of two species of Coelacanth, *Latimeria charmnae* and *L. menadoensis* will be sending the message above. Since WAZA, World Association Zoos and Aquariums, has stated that standard zoos and aquariums should have at least one of the In-situ Conservation Programs abroad. AMF has placed the Coelacanth Survey as the in-situ conservation project abroad and established the cooperative relation with the Indonesian Institute of Sciences LIPI, and also exchanged MOU with SAIAB, South African Institute for Aquatic Biodiversity, and Comoro National Museum. I agree the message of Dr. Tony Ribbink, Director of SAIAB, “Conservation of the coral reef is finally well connected with those of the Coelacanth, since rich coral reef biodiversity supply food for the Coelacanth.

Fig.8. Established cooperative research relation with LIPI Indonesian Institute of Sciences in 2004/11.MOU Exchanged. Dr. Suharsono Director of LIPI(right), Dr. Kasim Moosa, LIPI-RCO(center) and Y, ABE.

Fig.9. Established MOU with SAIAB, South African Institute for Aquatic Biodiversity. 2006/4 MOU exchanged.

Prologue of AMF Evolution and Extinction

Life emerged about 3.8 billion years ago, and the world has seen many species briefly flourished only ebb and disappear. Evolution does not necessary mean progress. Actually, evolution can also be seen as the history of extinction. Fossils and so-called living fossils like coelacanth have a message for humans, the only creatures with a civilization. Evolution and extinction is the theme of the prologue of the aquarium. AMF shows the fossils and living fossils through the windows of evolution.

AMF steps to Fathom the Mystery

Temporary exhibits named, “The Coelacanth, Fathom the Mystery” was held in AMF in 2001 following the Domestic Symposium. AMF has held and concerned the two international symposiums on the Coelacanth. AMF international symposiums was held in February 2002 in Onahama Japan, and Marathon Symposium in Florida was held in December 2002. The domestic committee meetings

held in April 2003. Through these symposiums and meetings, two proceedings have been published from Aquamarine Fukushima. Following is the my fish story of events on the evolution and coelacanth concerned.

Aquarists are always challenging to develop new stars from the non-charismatic species. The greeneye family is one of the themes. Tapetum lucida apparatus in eyeball is common characteristics with these fishes to reflect the light of dawn at the depth of continental shelf. Iwaki City designated the symbol fish of the City as greeneye, *Chlorophatahlmus spp* in 2001 and consigned AMF to make biological survey on the fish. This is rather tough species to keep alive more than tuna Evolution and Extinction. This will be a good simulation for the coelacanth stewardship.

Fig.10. Remotely Operated Vehicle ROV has forced the project.

AMF is conducting to make survey the greeneye off shore Iwaki with the specially ordered Remote Operated Vehicle, ROV, with pull down underwater camera, operation unit with TV monitor has already introduced to AMF. These could be operated max 300m deep. This is the smallest, right weight and high quality, portable ROV. Total weight of vehicle is 38 kg.

AMF project committee has already established the following sub-committees; Technical Survey, Government and Public Relation, Evolutionary survey and Conservation Awareness Survey, Educational Survey, Science-Population Size Survey, Symposium.

AMF desire is to develop the greeneye project toward the proposal. We could not be satisfied with the stuffing or iron coelacanth or movie any more. Aquarium group has developed techniques making survey, capturing, transporting and stewardship on the so many difficult fish same level as coelacanth. Present author hopes the dream breeding this phylogenetic milestone in captivity comes true in near future. AMF is one of the most appropriate aquariums to conduct survey on the coelacanth. Coelacanth should be one of the characters of aquarium in the future.

Zoogeography of Coelacanth, story behind the scene.

Present author discussed on the distribution of coelacanth in the zoogeographical viewpoint in the previous symposium (Abe 2002). For the Zoogeographical treatment of tropical marine fishes, the term Indo-western Pacific has been advocated by a number of authors including Ekman (1953), Cohen (1960,1973), Talbot (1970) and others. They mostly agree that the other three regional areas for tropical fish distribution are West Africa, the West Indies (Caribbean) and the Eastern Pacific (Panamanian). The fish fauna of the Indian Ocean and Western Pacific Ocean face each other through a transitional zone ranging from southern coast of Sumatra southward to the north eastern coast of Australia. It appears that tropical fish fauna of the Indian Ocean resulted from the dispersal and differentiation of the pacific species. The number of species constantly decreases as we proceed in a westerly direction.

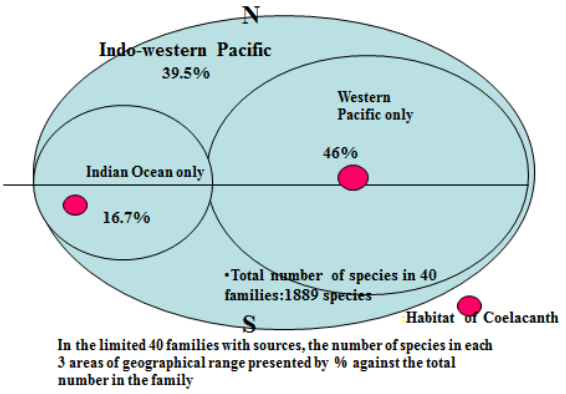

Fig.11. Coelacanth survived in the Indo-western Pacific.

Summarizing my past zoogeographical study in the waters of the Arabian Gulf (Kuronuma and Abe 1972, 1986) and Dr. Mochizuki's hypothesis mentioned at the last symposium (Mochizuki 2002), the distribution of coelacanth will be centered in the Western Pacific Region as the pattern shown by many other tropical marine fishes in the Indo-western Pacific. The discovery of Indonesian coelacanth was made by Dr. Mark Ardman, American Biologist.

Theme of AMF is the Oyashio cold current from north and Kuroshio warm current from the Indo-Western Pacific link with the greatest fish story with us AMF.

CLOSING, WITH THE TV CM, GRUMBLINGS OF COELACANTH ON OUR EARTH

Raja Laut Grumbling for the peaceful world.

Three hundred Million years ago Series:
Father of Raja Laut; "OH! It passed 3 hundreds million years since started Coelacanth!"
Son; "Shall we evolve soon!"
Father; "You are green! Its important don't change now"

ACKNOWLEDGEMENT

At that time named JLB Smith Institute of Ichthyology, Director Dr. Paul Skeleton kindly lent a juvenile specimen for us and Dr. Tim Andrews came to visit for the preparation of the temporary exhibits on coelacanth held at AMF in the summer of 2001, to whom, present author would like to express deep appreciation. The exhibits started in June and continued through September in 2001. I am remembering the International symposium had scheduled September 24, but September 11 terrorist's attacks caused the postponement until next February 16, 2003. Finally, I would like to express my appreciation the SAIAB's staff for their effort accomplished the conference, in the stage of initiation. Everything of the Greeneye Project of AMF has started with the Exhibition in 2001.
Many people engaged the projects of the greatest fish story since 1964 to whom we have to deeply appreciate.

Fig.12. Exhibit of the Greatest Fish Story in 2001.

Table1. the Greatest Fish Story

Year	Month	Activities
1964	MAR	Ueno Zoo Aquarium opened to public to commemorate 80th anniversary of Ueno Zoo.
1982	MAR-MAY	Special exhibit of Evolutional Tree, "You are now climbing the evolutional tree" in Ueno Zoo Aquarium.
1989	OCT	Tokyo Sea Life Park opened to public.
1992	JUN 30	Ueno Zoo Aquarium closed
2000	JUL 15	Aquamarine Fukushima open to public
	JUL	C7 Established 7 years long term Program
2001	MAR	Domestic Symposium. Established "Greeneye Research Project"
	JUL	Exhibit, "Coelacanth, Fathom the Mysteries" at AMF
2002	FEB 16	AMF 1st Coelacanth International Symposium (Proceedings published)
	FEB 17	Project Committee was held.
	DEC 04-07	Marathon, Florida International Symposium
2003	APR 21	Domestic symposium II(Proceedings published including the above symposium)
	DEC	African Coelacanth, Conservation Ecosystem Symposium, East London. SA
2004	NOV	Started Cooperative Research with Indonesian Institute of Sciences, LIPI
2005	APR	Survey with ROV, in Manado, Sulawesi Island with ROV and Deep Sea Diving
2006	MAY	Succeeded Filming Indonesian Coelacanth in in off Buol, Sulawesi
	DEC	Tracing Coelacanth offshore Buol, Sulawesi, Indonesia
2007	MAY	Survey offshore Manado, Sulawesi, Indonesia
	OCT	Survey off Tanga, Tanzania
	NOV 02	Int. Coelacanth Symposium
2008	DEC	Survey Trisei Isl. Manado, Sulawesi Isl. Indonesia
2009	OCT	Juvenile Coelacanth found off Manado, Sulawesi, Indonesia
2010	NOV	Survey off Papua, Indonesia
2011	MAR	Research stopped because of the disasters
2012	MAY	Survey North Sulawesi, Two specimens filmed, dissected in Indonesia. Found the garbage bag in the stomach.
2013	JUN	Survey Northern Sulawesi, one specimen filmed.
2014	AUG	Program to establish Coelacanth Research Station started in Sulawesi, Lolak/Bitung.
2015	MAY	Filmed Coelacanth off Lolak/Bitung.
2016	NOV 02-03	3rd International Coelacanth Symposium, "Fathom the Mysteries" held.
2017	AUG	Morphological and anatomical joint studies on both species Indonesian and African was conducted.
2018	NOV 05-10	10th IAC was held in Onahama Fisheries Port, Fukushima

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